

Instructor: Dr. Dayan Knox

Teaching Assistant: Samantha Keller, office (93 McKinly Laboratory) – T,R 12:00 pm – 1:00 pm

Class time: T,R – 9:30 am – 10:45 am

Class space: 103 Sharp Lab

Goals:

This class is intended for NS and BS majors. The goal of this class is to introduce Neuroscience to the student. Students will learn fundamental information about the cellular biology and electrophysiological properties of neurons, neuroanatomy, psychopharmacology, and how the activity of neurons can yield sensory perception, motor control, and complex behavioral/psychological functions such as learning and motivation.

Meeting Times:

Class meets every Tuesday and Thursday from 9:30 am – 10:45 pm from February 10th to May 19th. This means we have a total of 30 meeting times for this class. Each class will be divided into three sections; a) Quiz for 10 minutes and b) lecture for 30-60 minutes, and a 5 minute review of material covered in class if time permits. On scheduled days we will also have, review sessions. For these sessions, instead of lecture, we will have a mock exam where the upcoming exam will be reviewed. Also some Lectures will be in the form of a talk. You will not be examined or quizzed on materials in talks. In addition, during these sessions questions about specific topics from previous classes can be raised. Finally, there will be group presentations. Students will form in groups, defined early on in class, and present about the relevance of a topic in Neuroscience to everyday life.

Groups

Students will self-assign into the following groups within the first two weeks of class. If a particular student is not a part of a group, then I will assign students to groups. Here are the following groups.

LTP

Amygdala

Hippocampus

Optogenetics

CREB

Executive function

Consolidation

Emotion

Email the TA, Samantha Keller, and let her know which group you wish to belong to

Course Grade

Summary: A total of 100 points can be obtained in this class. In addition 5 additional extra credit points can be earned. Points can be earned as follows

A) Class Discussion (5 points): This is a measure of the student's activity in the classroom. Certain posts made on the blog on Sakai may also count as class discussion. Points will be assigned to students based on questions raised and answered, answers refuted, and points clarified. Points will be assigned at the end of class in an all or none fashion. For each awardable comment a student makes, 0.25 points will be awarded for a maximum of 0.5 points per class.

B) Quiz (30 points): These will be five - ten multiple choice, or fill-in-the blank, questions given at the start of every class and will be based on the material covered in the previous class. The only exception to this is the first class. Each quiz is worth 5 – 10 points with each question being worth 1 point. The total points awarded for all quizzes will be scaled to yield 30 points to your overall grade. For example, if the total points for quizzes come up to 100, and a student gets 100, this score will be scaled to yield a total score of 30. These quizzes will be done using iClicker so please purchase your iClicker and be prepared to use them prior to coming to class. The frequency for this class is AB.

C) Examinations (60 points): There will be three examinations: Exam I, II, and a final exam. Exams will be a combination of multiple choice, fill in the blanks, and short answer questions based on material presented in class and covered in the book. Exams I and II will be worth 15 points each and the final exam will be worth 30 points. Each exam will only test information about topics covered in the class thus far without overlap. Thus, Exam II will not contain any material covered in Exam I. However, the final exam will be inclusive of all material covered in the class.

D) Class Presentations (5 points): Students will form groups early in class. At specified periods during this course groups will present on the relevance of Neuroscience to everyday life. For example, a group of students could present about how the emerging field of Neuroscience has affected the more established field of Psychology in a positive or negative manner. Examples of other topics will be presented on the Sakai site.

Extra Credit Opportunities (5 points): This will be given to particularly insightful comments during class or on the Sakai discussion board. Allocation of these extra credit points will be determined by the Professor. Also, the top 10 scorers in every exam will be allocated an extra credit point. Keep in mind a student can only get a maximum of 5 points.

Grading Scale: The course grade will be assigned according to the scale indicated below:

A+	97 - 100
A	93 - 96
A-	90 - 92
B+	87 - 89
B	83 - 86
B-	80 - 82
C+	77 - 79
C	73 - 76
C-	70 - 72
D+	67 - 69
D	63 - 66
D-	60 - 62
F	< 62

Textbook

Biological Psychology: An Introduction to Behavioral, Cognitive, and Clinical Neuroscience, 7th edition, S. Marc Breedlove and Neil V. Watson.

Companion website www.biopsychology.com

Course Outline

02/11/14, Class 1

- Quiz 1
- Material read - Chapter 1
- Lecture 1 – Introduction to class and historical perspectives of Behavioral Neuroscience

Modules 1: Structure and function of cells in the brain

02/13/13

- Class cancelled due to snow storm

02/18/14, Class 2

- Quiz 2
- Material read - Chapter 2 & 3
- Lecture 2 – Cell types in the brain and generation of the action potential I

02/20/14, Class 3

- Quiz 3
- Material read - Chapter 2 & 3

- Lecture 3 – Generation of the action potential II and modelling of the neuronal membrane potential

Module 2: Psychopharmacology

02/25/14, Class 4

- Quiz 4
- Material read – Chapter 4
- Lecture 4 – Psychopharmacology I: Action, synthesis, reuptake

02/27/14, Class 5

- Quiz 5
- Material read – Chapter 4 & 5
- Lecture 5 – Psychopharmacology II: Signal Transduction and Hormones

3/04/14, Class 6

- Material read – Chapter 4 & 5
- Lecture 6 – Psychopharmacology III: Actions of drugs and gap junctions
- Review of Exam structure and review session

03/06/14, Class 7

- Exam 1

Module 3: Neuroanatomy

03/11/14, Class 8

- Review of Exam 1
- Material read – Chapter 6
- Lecture 7 (Talk) – Evolution of the nervous system

03/13/14, Class 9

- Quiz 6
- Material read – Chapter 2
- Lecture 8 – Structure of the Nervous system I

03/18/14, Class 10

- Quiz 7
- Material read - Chapter 2
- Lecture 9 – Structure of the nervous system II and measuring global measures of neural activity

Module 4: Methods in Neuroscience

3/20/14, Class 11

- Quiz 8
- Material read – Chapter 2 & 3
- Lecture 10 (talk) – Central limit theorem and methods employed in Neuroscience

Module 5: Sensory perception and motor control

3/25/14, Class 12

- Quiz 9
- Material read - Chapter 10
- Lecture 11 – Vision I

3/27/14, Class 13

- Quiz 10
- Material read - Chapter 10
- Lecture 12 – Vision II

Spring Break

3/28/14 – 4/7/14

4/8/14, Class 14

- Quiz 11
- Material read – Chapter 9
- Lecture 13 – Auditory Systems

4/10/14, Class 15

- Quiz 12
- Material read - Chapter 11
- Lecture 14 – Motor Control

4/15/14, Class 16

- Quiz 13
- Material read - Chapter 11
- Lecture 15 – Mock exam II and review of material for Exam II

4/17/14, Class 17

- Exam II

4/22/14, Class 18

- Presentation by the following groups
 - LTP – Neural plasticity and how it relates to exam preparation
 - Amygdala – Psychopathy and the amygdala
 - Hippocampus - Drugs on College Campuses
 - Optogenetics – Study drugs

Module 5: Psychological function mediated by neurobiological activity

4/24/14, Class 19

- Material read – Chapter 14
- Lecture 16 – Sleep and Biological Rhythms
- Review of Exam II

4/29/14, Class 20

- Quiz 14
- Material read – Chapter 17
- Lecture 17 – Learning and Memory I

5/1/14, Class 21

- Quiz 15
- Material read - Chapter 17
- Lecture 18 – Discussion

5/6/14, Class 22

- Material read – Chapter 16 & 18
- Lecture 19 – Learning and Memory II

5/8/14, Class 23

- Material read - Chapter 16 & 18
- Lecture 20 – Neurological and emotional disorders

5/13/14, Class 24

- Presentations by the following groups
 - CREB – CREB, memory, and Alzheimer’s disease
 - Executive function – Autism and the brain
 - Consolidation – Alcohol and the brain
 - Emotion – Sleep and neurodegeneration

5/15/14, Class 25

- Lecture 23 – Mock exam followed by discussion and review of the material. Please keep in mind that the final exam is comprehensive

5/27/14, Final exam 103 Sharp Hall from 10:30 am – 12:30 pm

Attendance:

Attendance is not required for this class but is STRONGLY encouraged. Anything discussed in class may be included on an exam, even if that information is not found in the textbook or online resources. Thus, it is in everyone's best interest to attend. If you miss class, you can get the outline from the PowerPoint on Sakai, and/or obtain notes from a classmate.

Office hours:

Office hours are opportunities for students to clarify concepts that are unclear or address questions concerning the assignments, and are not meant to find out what material was presented in a class that the student may have missed.

Grade Appeals:

If, after receiving an exam, quiz, or critique back during class, you think a mistake has been made in the grading of your exam, please do not ask about this during class. Write/type your questions/concerns, and provide reference to specific pages from the book to support your concern, and turn these questions into me at the end of the class period or via email. You will receive a response, and any grade adjustment necessary, within one week. THIS IS THE ONLY WAY that your concerns will be addressed. ONLY written questions and comments THAT YOU SUPPORT will be evaluated.

Academic Dishonesty/Plagiarism/Cheating:

We encourage students to work and study together whenever possible. If you cheat on ANY assignment (even extra credit), you will receive a grade of F (Failing) for the course. Plagiarism is when you represent someone else's ideas or words as your own and is considered as cheating. Please avoid academic dishonesty at all costs

Misconduct in class or on written components of the class

Obscenity is not tolerated in class. Every swear word you say in class will result in the loss of 10 points. The same applies for exams. You will lose 10 points for every obscenity written on an exam. It is up to the instructor's discretion to judge if a swear word was incidental, by accident, or intentional. Swear words that are uttered by accident and/or incidental (in the opinion of the

instructor) will not be penalized. If you are being disruptive in class I will ask you to leave. If you do not leave I will have to call campus safety/police to remove you. Please, let's not let things escalate to this level.

Student Disabilities:

Any student requiring accommodations or services due to a disability must contact Services for Students with Disabilities (SSD). SSD can also arrange to provide course materials (including this syllabus) in alternative formats if necessary.

Students' Rights and Responsibilities:

Please refer to the following web site for a complete listing of all student rights and responsibilities

NOTE:

The course syllabus provides a general plan for the course. We are committed to following the syllabus but there is no guarantee that we will. Altering the syllabus may also mean changing the nature or timing of exams/assignments. By continuing in the course after reading the syllabus, you are indicating that you accept the terms of the syllabus.